

# **MMS Environmental Studies Program**

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## **FY 2000 Prospectus**

**Prepared for:  
OCS Scientific Advisory Committee**

**By:  
MMS Environmental Studies Program**

**— MMS ESP Research Mandate —**

Establish information needed for assessment and management of environmental impacts on the human, marine, and coastal environments of the OCS and potentially affected coastal areas.

(Outer Continental Shelf Lands Act, Section 20)

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# **MMS Environmental Studies Program**

## **FY 2000 Prospectus**

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Introduction.....	1
ESP Overview .....	1
Addressing OCS Information Needs.....	2
New Research Projects	
Gulf of Mexico Region .....	5
Alaska Region .....	11
Pacific Region .....	15
Headquarters .....	19



## Introduction

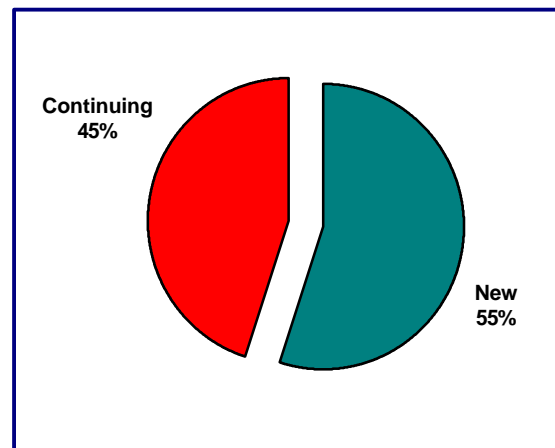
As stewards of our Federal offshore lands known as the Outer Continental Shelf (OCS), the U.S. Department of the Interior's Minerals Management Service (MMS) is responsible for balancing the Nation's exploration, development, and production of petroleum energy resources and other marine minerals with the protection of the human, marine, and coastal environments.

MMS regulates exploration, development, and production activities on about 8,000 active leases (4,000 production facilities) to ensure that these activities are conducted safely and in an environmentally sound manner.

The MMS's environmental programs serve this important function by providing the solid scientific underpinnings needed for critical program decisions that must, by law, accommodate this delicate balance. The commitment to environmental protection begins with the first steps in the leasing process and continues through to the end of the production activity with decommissioning/removal of the production structure. In support of this commitment, the MMS places a high priority on environmental and socioeconomic research and allocates about \$19 million annually to these efforts. This Fiscal Year (FY 2000) Prospectus was prepared by the MMS Environmental Studies Program (ESP) for the OCS Scientific Advisory Committee to briefly describe new projects that will be undertaken this year.

## ESP Overview

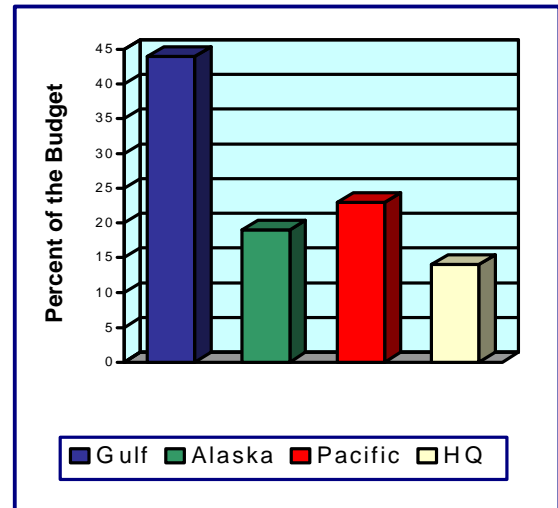
In FY 2000, approximately 55 percent of the ESP budget will be available to start new projects. The twenty-four new projects being designed involve a diverse range of activities including workshops, field studies, and modeling efforts. About 66 percent of the budget will be allocated to projects initiated via competitive procurement; 25 percent will be invested in cooperative agreements with colleges and universities; and the remainder will be for research accomplished in house or with other Federal Agencies.



**More than one-half of the ESP budget will be devoted to new projects in FY 2000**

The Gulf of Mexico (GOM) Region will continue to be the primary focus for research, with over 40 percent of the budget allocated to scientific and information in the central, western, and eastern GOM. The Alaska and Pacific Regions' studies will account for almost the same level as previous years (17% of the budget in Alaska and 21% of the budget in the Pacific).

The MMS will continue to rely on Regional Coastal Marine Institutes (CMI's) to address requirements for new information being developed. The CMI budget represents 20 percent of the overall ESP budget.

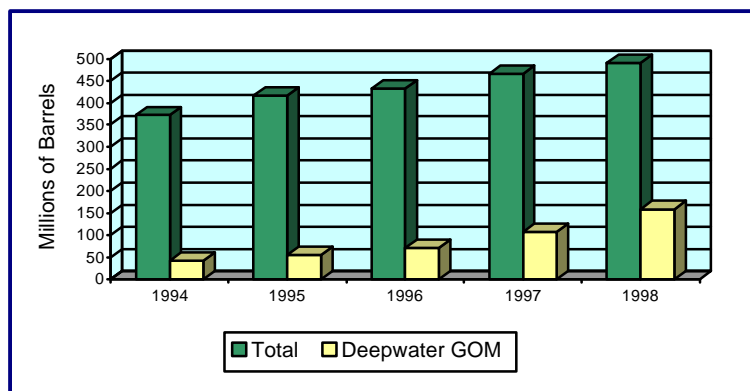


**GOM will continue to be the primary focus for ESP research in FY 2000**

## Addressing OCS Information Needs

### GOM Region

In August 1999, MMS received a development plan filed by Chevron U.S.A. for Chevron's Destin Dome project in the eastern GOM. An environmental impact statement (EIS) has been prepared on this natural gas project, and issues related to Coastal Zone Management Act consistency are currently being reviewed. In addition, Amoco Production Company is moving ahead with a natural gas development project 100 miles (185 km) offshore Alabama ("King's Peak") in water depths of 5,000 to 6,000 feet (1,500 to 1,800 m) of water. To support these and other future activities, additional environmental studies of the oceanic circulation and environmental monitoring are needed and are currently being designed.



**Deepwater GOM will play an increasing role in overall OCS oil production in the future**

Since 1996, the deepwater Gulf of Mexico OCS ( $\geq 1,000$ -foot water depth) has experienced a substantial increase in leasing, exploration, development, and production activities.

As of July 1999, there are 96 fields that have been discovered in the deepwater Gulf of Mexico, with 22 of these fields under production. The remote location, harsh operating environment, new and unusual technologies, different operating procedures, and additional environmental issues present regulatory and environmental concerns.

Additional information on deepwater-related issues will enhance MMS environmental analyses and assist in developing new and refining current mitigation.

## **Alaska Region**

In Alaska, MMS is focusing on the Northstar and Liberty development plans in the Beaufort Sea. The MMS recently approved the Northstar plan, which provides for drilling up to seven wells on two OCS leases in State and Federal waters. This project will be the first approved plan to use a subsea pipeline. Production is scheduled to begin late in 2001. The MMS (with cooperation from other agencies, the State, and the North Slope Borough) is also preparing a draft EIS for British Petroleum's Liberty Project, the first arctic development completely in Federal waters.

To support the required National Environmental Policy Act (NEPA) analyses for these projects, the ESP initiated a new suite of studies in the Beaufort Sea in 1999. These studies embrace interdisciplinary efforts that include biological, chemical, and physical oceanographic components designed to measure sublethal effects caused by offshore activities and to improve oil-spill risk analyses. Alaskan studies will continue melding traditional knowledge with western science. Again, the focus will be the Beaufort Sea, but will also include collecting information in the Cook Inlet area to support NEPA analysis for potential future leasing activity in that area.

## **Pacific Region**

There are 36 undeveloped leases in the Southern California Planning Area, which may see exploration and/or development activity during the next decade, resulting in as many as four additional OCS platforms. Decommissioning activities will also be an increasingly important part of the Pacific Region's focus relative to offshore platforms, associated pipelines, and onshore facilities.

Studies will continue to monitor impacts associated with ongoing production activities. Particular emphasis will be placed on monitoring the general health of intertidal communities and coastal bird resources, and on monitoring regulatory compliance at specific platforms.

A major emphasis in the Pacific Region will be the continued collection of physical oceanographic field data which are needed for environmental assessments and review of oil-spill contingency plans. In anticipation of the high-energy seismic surveys that may be conducted, MMS will consider the evaluation of mitigating measures on marine mammals.

## Headquarters

The Headquarters offices, taken together, address national OCS oil and gas issues and marine minerals issues.

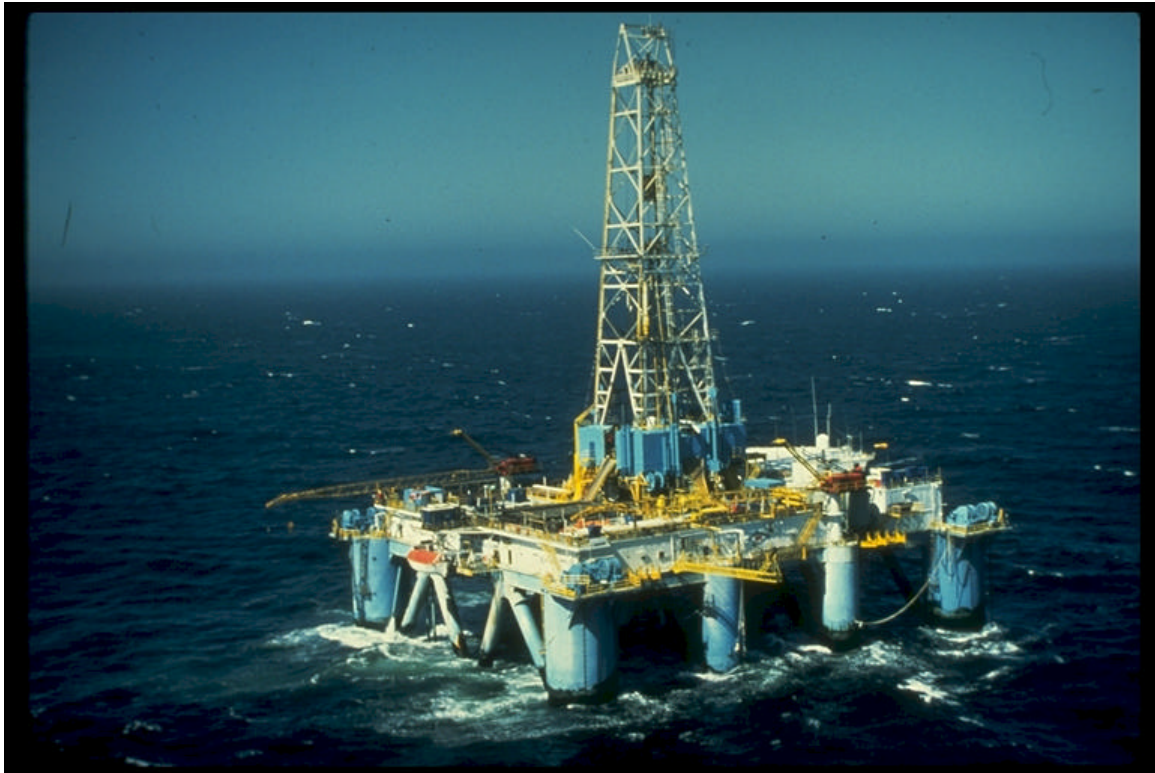
In the offshore oil and gas area, updates to the air quality models currently in use for the OCS have not kept pace with advancements in onshore models. It is important that MMS use a model that incorporates current knowledge concerning over-water atmospheric boundary layer structure and dispersion to apply to OCS emission sources. A new study will adapt one of the Environmental Protection Agency's advanced models for use on the OCS to enhance MMS air quality impact analyses in Lease Sale EIS's.

Marine mineral issues are best exemplified by the recent severe storms along the U.S. East and Gulf Coasts, which have resulted in severe beach erosion and unprecedented levels of economic losses. High storm waters have carried away vast amounts of beach sand and have breached dune systems that protect the coastal areas and provide a source of revenue for many beach communities. Many of these areas will require extensive nourishment in the near term to offset this damage and to prevent further damage in the event of future storms. Several ongoing studies and two new studies will address the environmental implications of using submerged shoals located on the Federal OCS as long-term sand borrow areas for beach renourishment.



# **New Research Projects**

## **Gulf of Mexico Region**



## **Deepwater Program: Effects of Oil and Gas Exploration and Development at Selected Continental Slope Sites in the Gulf of Mexico**

The accelerated movement of industry into water depths of 1,500-2,000 meters poses new challenges to MMS; specifically, operational issues regarding distance from shore, water depth, contamination and disturbance of benthic habitats, and yet-to-be developed technology. For example, the fate and effects of discharges in deeper waters may be much different from those on the continental shelf.

The objective of this study is to assess the impacts of oil and gas development at three continental slope sites in the Gulf of Mexico:

- as far east as possible (DeSoto Canyon),
- in the central Gulf, and
- in the western Gulf.

The deepwater portion of the Gulf of Mexico has shown a remarkable increase in oil and gas exploration, development, and production. Currently, there are about 90 announced Gulf deepwater prospects—the Gulf operators have been setting and surpassing records in water depth and length using new and improved proven technology.

Surveys will be conducted at each site to characterize the geological, physical, chemical, and biological characteristics of the areas. Ideally, these sites would be located in similar water depths and similar current regimes. Environmental indicators of contaminant stress will be selected and sampled to measure changes in the benthic environment. Basic questions in the form of null hypotheses will be incorporated into the study design model. The assessment will use a sampling design that is statistically valid and incorporates numerous reference sites for comparison. The final analyses will document the immediate physical, chemical, and biological impacts of the three deepwater developments.

This study will provide the information necessary for managing deepwater oil and gas development in the GOM well beyond the continental shelf break. Information derived from this study may lead to the establishment of mitigative measures for future deepwater exploration and development and to regulations specifically tailored to deepwater operations.

## **Effects on Local Human Communities of OCS Petroleum Extraction in Frontier Areas**

This study will clarify social and economic issues relevant to OCS petroleum extraction in both core and frontier areas. It will provide descriptions of what effects have been known to occur and what effects are likely to occur. It will also describe both the benefits and the liabilities of petroleum extraction at regional and community levels, and will address current issues of economic sustainability.

The focus will consider not only physical and biological characteristics of various marine resources, but also the infrastructure developed to exploit those resources. This study will enable MMS to put in perspective the residential concerns in States such as Florida and North Carolina. At the regional and community levels, this study will assist in answering questions regarding the effects of OCS drilling on communities and nearby natural marine resources. In addition, this research will provide MMS with knowledge of international experiences and issues other nations have faced and resolved.

## **The Reorganization of the Oil Industry: A Review of the Literature**

The offshore oil and gas industry plays a significant role in the economies and cultures of Louisiana and Texas, and an important role in those of Alabama and Mississippi. Over the past several years, this industry has been going through changes in organization, joint-venturing, outsourcing and subcontracting, and financing that may substantially affect its role in the GOM Region.

Industry reorganization was first identified as an issue in the aftermath of the 1980 “oil bust.” At the time, MMS and others expressed a concern that the “flight” of the major oil companies overseas was leaving a vacuum that was being filled by small independents less capable of meeting certain safety and financial obligations.

The two objectives of this study are:

- to review the state of knowledge on changes to the oil industry operating in the GOM Region, and
- to describe these changes, emphasizing those that have occurred since 1980, and to consider their significance to Gulf Coastal States.

Recent changes to the oil industry have significant implications for managing the OCS program in the GOM Region, yet these changes are not well understood. This study will provide insight that will be used throughout the Region’s management and planning processes

## **Refining and Revising the Gulf of Mexico OCS Region High Probability Model for Historic Shipwrecks**

Since the archaeological review process was first instituted by the GOM Region, over 70 shipwrecks have been discovered on the OCS. Only a fraction of these are known to be historic. Significantly, almost none of the historic shipwrecks were located within the “high-probability” zones designated by a model developed and used since 1987. By more precisely targeting the areas where shipwrecks are likely to exist, MMS can ensure that operators do not waste time and money conducting surveys in inappropriate places, and thus do a better job of protecting these resources. The discovery of historically recorded shipwrecks will eliminate the need for any further survey for those particular wrecks in a given area, which could represent a significant cost saving to industry.

This study will refine and revise the existing shipwreck model that the GOM Region uses to determine which leases require archaeological surveys at 50-meter linespacing. This revision will require reviewing the existing MMS shipwreck data and shipwreck model to determine specifically where the 1987 study is flawed, and how this model can be improved by examining new shipwreck databases.

One aspect of this study will be to examine the correlation between existing shipwrecks and hangs (fishing gear hang up on OCS structures) associated with the MMS-National Oceanic and Atmospheric Administration sponsored Fisherman’s Contingency Fund database by groundtruthing a limited number of hangs. This task will serve to verify the presumed correlation between hang and wreck sites and to validate the new model. This information will be synthesized and used to develop a new shipwreck model for the GOM Region. The study

will also review, compare, and contrast the state-of-art of marine remote-sensing instrumentation that could be used to better fulfill requirements in the pertinent GOM Region Notice to Lessee's.

## **The SO<sub>2</sub> and NO<sub>2</sub> Increment Analysis for the Breton National Wilderness Area**

The Clean Air Act strictly limits how sulfur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>) concentrations may increase over the Breton National Wilderness Areas (BNWA); however, there is no present information that demonstrates whether that area is in compliance with the mandated limits. If OCS activities are to continue near the BNWA, the increment analysis is needed to determine the degree of increment consumption and to determine the amount of air quality degradation at the BNWA.

The objectives of this study are:

- to synthesize data and analyses for a brief pollutant climatology on SO<sub>2</sub> and NO<sub>2</sub> concentrations over the BNWA,
- to develop emission inventories for sulfur oxide and nitrogen oxide sources,
- to select an air pollution model based on representative simulation of present concentrations, and
- to simulate SO<sub>2</sub> and NO<sub>2</sub> concentrations over the BNWA for 1977 (SO<sub>2</sub>) and 1988 (NO<sub>2</sub>), and to determine their respective increments.

## **Gulf of Mexico Fisheries Workshop**

Many of the fisheries studies in the 1990's were funded to answer pivotal questions concerning the ecology of platforms and their effects on gulfwide fisheries. This project will compile the past 10 years of fisheries studies and examine some data gaps. The workshop will attempt to set a clear path from past issues to future study needs.

## **Workshop on Physical Processes of the Slope and Rise**

Given the complexity, scope, and cost of the FY 2001 field study of physical processes over the slope and rise of the western and central GOM, a workshop will be held to review and evaluate the latest information on physical processes and to refine the experimental design.

The objectives of this workshop are:

- to review the results of *Deepwater Physical Oceanography Program: Reanalysis and Synthesis of Physical Oceanography Historical Data*,
- to identify information gaps to be filled, and
- to recommend modifications and refinements to the experimental design and scope of the field study.

## **Offshore Data Search and Synthesis on Highly Migratory Fish Species in the GOM and the Effects of Large Fish Attracting Devices (FAD's) Located Worldwide**

As in many other worldwide locations, the large structures in deep waters of the Gulf will likely act as fish attracting devices (FAD's) that may well impact populations of highly migratory fish species (HMFS).

The objectives of this project are:

- to identify important published/unpublished information pertaining to HMFS in the GOM,
- to identify important published/unpublished information pertaining to FAD's and their effects on HMFS worldwide,
- to draft a conceptual model of HMFS in the Gulf of Mexico; and
- to identify components of HMFS fisheries that may be uniquely sensitive to impacts.

A synthesis report will bring together information on living marine resources and ecology into an ecosystem framework. The MMS needs information concerning these species to estimate the potential effects of deepwater development, to support management and policy decisions, and to oversee the relationship between the oil/gas and fisheries industries.

The GOM Region has contributed 22% of the Nation's oil and 27% of its natural gas, thus helping to alleviate U.S. dependence on imported oil.



# New Research Projects

## Alaska Region





## **Update of Circulation and Oil-Spill-Trajectory Model for Beaufort Sea Nearshore Development Areas**

The current circulation model is unable to resolve the small barrier islands and ocean circulation within the first 10-20 km beyond the State 3-mile line, where Federal OCS development is occurring. This study will provide a finer resolution model to simulate circulation in the nearshore Beaufort Sea, with emphasis on the first 25 km beyond land between the Colville and Canning Rivers.

The model will be designed to provide the information needed to run the MMS oil-spill trajectory model. The Circulation and Oil-Spill-Trajectory Model is a cornerstone to regional EIS's, environmental assessments, and oil-spill contingency planning. Oil-spill issues involving or resolvable by the trajectory model constitute half the public comments submitted on EIS's for proposed offshore oil and gas sales in the Alaska OCS Region.

Information from this study will be used in preparing arctic exploration and development EIS's and in reviewing oil-spill contingency plans for OCS and coastal facilities.

## **Environmental Sensitivity Index (ESI) Shoreline Classification in the Beaufort Sea**

The purpose of this study is to obtain an ESI shoreline dataset for use in ArcView and Arc/Info to facilitate faster and more accurate analysis in the Beaufort Sea EIS's and environmental assessments. The ESI shoreline data set will also be used in analyzing oil-spill prevention plans.

This study would improve MMS's ability to assess potential shoreline effects by:

- providing direct information to analysts,
- improving the selection of environmental resource areas for the Oil-Spill Risk Analysis Model, and
- improving the information base in the COZOIL model.

This study would update the existing classification of shoreline in the Beaufort Sea and make the data available in a digital format. This information would be available in Technical Information Management System mapping for use by MMS decisionmakers, EIS analysts, and others who need the information for regulatory functions.

## **Alternative Oil-Spill Occurrence Estimators for the Beaufort/Chukchi Sea OCS**

The Alaska OCS Region intends to calculate oil-spill frequency based on the Alaska North Slope and Arctic Canada experiences rather than on GOM experience. The Region plans to consider all major onshore and offshore pipeline spills in their environmental impact assessment activities.

The first step in this process involved a preliminary study conducted in FY 1999 that collated readily available information on oil industry spills of greater than or equal to 100 bbl in the Alaska North Slope and Arctic Canada. It also verified spill information for the larger spills



(≥ 500 bbl) and estimated provisional spill rates for use in the Beaufort Sea OCS.

The objectives of this study are:

- to provide statistical support to MMS in evaluating best statistical methods to estimate oil spill rates,
- to verify oil-spill information for spills greater than or equal to 100 barrels that were included in the preliminary study, and
- to evaluate alternative approaches to estimating oil-spill risk.

## **Synthesis and Collection of Meteorological Data in the Nearshore Beaufort Sea**

All MMS circulation and oil-spill models need accurate wind time-series data, and MMS seeks to improve its data for the nearshore Beaufort Sea. The MMS uses such models in regional and developmental EIS's, environmental assessments, and oil-spill-contingency planning.

From research done in the 1970's and 1980's, one can conclude that the upper air pressure fields used in Arctic regional circulation models give increasingly inaccurate results for surface winds within 20-30 km of the Beaufort Sea coast. The objectives of this study are:

- to develop a wind time series for sensitivity testing of MMS's nearshore and general regional circulation and trajectory models
- to collate and collect meteorological data for 2 years around the Northstar, Endicott and Liberty development projects, and
- to conduct sensitivity tests to determine the optimum time step for wind time series for relevant MMS models.

## **Arctic Nearshore Impact Monitoring in Development Area (ANIMIDA)**

Coastal indigenous peoples in the villages of Nuiqsut, Kaktovik, and Barrow are particularly concerned about long-term effects of offshore developments at Northstar and Liberty, as well as long-term effects of any development from OCS Lease Sales 170 and 176.

This study will gather long-term monitoring data to provide a basis of continuity and consistency in evaluating potential impacts from site-specific, upcoming development and production in the Beaufort Sea.

The first year, Phase 1 (FY 1999), includes a near-term focused literature review, planning, and baseline effort focused on the key physical environmental factors that are known to significantly interrelate with sensitive biota or other valued resources.

Phase 2 (FY's 2000-2003) will involve interdisciplinary monitoring components for which key objectives and logistics will be determined following public comment on the Northstar and Liberty projects. The study is expected to include specific biological monitoring methods for application to benthic/kelp communities, localized vertebrate populations, and subsistence-use patterns. Noise propagation modeling, animal movement and behavior, traditional knowledge

sources, and other tasks will be integrated. The final year of ANIMIDA will be devoted to reporting the monitoring results.

# New Research Projects

## Pacific Region



## **Santa Barbara Channel-Santa Maria Basin Oceanographic Data Support Program for Biological Studies**

The primary objective of the proposed Oceanographic Data Support Program is to supply real-time data for existing and future biological and long-term multidisciplinary studies conducted in the area of active Pacific OCS leases.

A field program will consist of:

- four sparsely instrumented moorings (each with one vector-measuring current meter),
- a supply of 25 surface drifters to be deployed in conjunction with important biological cruises and nearshore oceanographic research,
- satellite imagery,
- at least one cruise per year, and
- an Internet web page displaying the real-time data that will be updated several times daily.

This study will greatly enhance the researchers' ability to address interannual variability in the data collected in the larger study. This ability is very important to both MMS biological and physical oceanographic research. The collected information will directly support MMS's immediate oil and gas regulatory interests concerning the OCS oil and gas leases in the Santa Barbara Channel-Santa Basin.

## **Fisheries Resource Database**

The Fisheries Resource Database is an update and extension of a previous project that collected and archived commercial and recreational marine fishery data from the coasts of California, Oregon, and Washington. The objectives of the database are to provide:

- a centralized archive of current and historical fish catch data in the southern California planning area that can be easily updated,
- a database that will be fully compatible with the MMS corporate database, and
- a convenient tool for retrieving fisheries data in both tabular and graphic form.

This database is needed for proper analysis and decisionmaking regarding increased Pacific OCS oil and gas activities scheduled to begin in the next 3 to 5 years in the Santa Maria Basin and Santa Barbara Channel. These activities will include exploration, development, and platform decommissioning.

## **Coastal Marine Institute (CMI)**

The CMI was initiated in July 1994 as a cooperative research and training program involving MMS, the State of California, and the University of California and as a vehicle to leverage available MMS funds. Its purpose is to provide the MMS with high-quality, peer-reviewed studies of the effects of OCS development.

The focus of the university-based program is to study the long-term environmental, economic, and social consequences of oil and gas production in the Pacific OCS Region. The CMI arrangement provides a pool of research funds whereby the MMS contribution is matched dollar for dollar.

## **Coastal Beach Recreation Inventory and Valuation Study**

In the Pacific region, public attitudes and values play very strong roles in an individual's perception of the effects of coastal development (including the oil and gas activities) on recreation and tourism, which, in turn, puts constraints on further development. The southern California coast is heavily populated. High-quality beach area is scarce, and the demand for multiple-use beach recreation area is growing. The effect of offshore activity on the general character of the communities and the specific effects it has on coastal recreation and tourism has been under long-term debate. Beach recreation activities, which help define the quality of life for local residents, are very important to regional and local economies. For this reason, accurate measures of activity and the existing environment are critical to MMS's assessment and management of projected and cumulative impacts. This information is also important to State and local governments who are concerned about the possible impacts from offshore energy operations and other factors that affect beach recreation. These factors will likely play an important role in determining the future status of exploratory and drilling leases in California.

Currently, the State of California is developing a general systematic model for valuing beach recreation based on primary beach attributes data collected in Los Angeles and Orange Counties (LAOC). That system estimates the value of beach recreation for a given location and how this value may be affected by characteristics of the location. This study intends to enhance the State's system by extending it to the Tri-County areas (Ventura, Santa Barbara and San Luis Obispo), replicating the methodology, to the extent possible, used in LAOC study.

Natural seeps introduce about one hundred times more oil (about 1,000 barrels per day) into U.S. marine waters than do OCS oil and gas activities.

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# New Research Projects

## Headquarters



## **Environmental Surveys of Potential Borrow Areas on the East Florida Shelf and the Environmental Implications of Sand Removal for Coastal and Beach Restoration**

The MMS has been involved for several years in a cooperative partnership with the State of Florida to evaluate OCS sand resources offshore the central Atlantic Coast (Cape Canaveral to Jupiter area), which may be suitable as beach replenishment material. Requests to use these resources are expected from the State and local jurisdictions within the next 3 to 5 years. The level of detail regarding the biology and physical characteristics of these areas is not adequate at this time to make reasoned decisions regarding the environmental consequences prior to actual dredging of the areas.

The purpose of the study is to determine:

- potential effects prior to actual dredging of the identified sand resource areas;
- the likelihood of adverse environmental impacts on the resident biological organisms, and
- physical characteristics of the sand resource areas.

The information gathered from this study will be used in the EIS for proposed hard mineral projects and for leasing and development decisions related to dredging for sand restoration of the east Florida coastal areas experiencing severe erosion.

## **Development and Testing of a Regional Management Approach for Federal Offshore Sand Borrow Areas on the U.S. East Coast**

Many of the submerged shoals located on the Federal OCS are expected to serve as long-term sources of sand borrow material for beach renourishment and coastal restoration projects.

These resources must be managed on a long-term, systemwide basis in such a way as to ensure that environmental damage will not occur as a result of continued and prolonged use.

The purpose of this project is to establish a regional group (composed of Federal, State, and local government representatives, and scientific and technical personnel) to develop goals, guidelines, and procedures to ensure the most cost-effective and environmentally sound long-term use of materials from submerged shoals on the U.S. East Coast.

Efficient management of OCS sand resources requires treating these areas as interconnected components rather than individual projects.



## **Development of Next Generation Air Quality Models for OCS Application**

As air quality models for onshore use become more advanced, the models used for the OCS need to be updated. It is important that MMS have an available model that incorporates current knowledge concerning atmospheric boundary layer structure and dispersion.

The purpose of this study is to modify and adapt one of the Environmental Protection Agency's "third generation" models (such as AERMOD) to incorporate over-water boundary layer and dispersion characteristics. A review of MODELS3 will also be conducted to determine how well it simulates boundary layer and dispersion over water. The resultant model will be used by the OCS operators in their submittal of plans and by MMS in analyzing air quality impacts for lease sale EIS's.

## **Coastal Analysis Tools: Evaluation and Enhancement**

There is a generally recognized lack of coordination in the development of Geographic Information Systems (GIS) tools for coastal managers. Tools such as AVMSAS have been developed in a fragmented environment, funded through various sources, often resulting in duplicative efforts. It is inefficient to continue this current piecemeal developmental approach. Long-term Federal coordination of tool development would be helpful in serving those using GIS for critical coastal management decisionmaking.

This project will provide startup funding to evaluate existing tools and enhance GIS tool development. Continuing the development of tools to place the analytical power of GIS in the hands of environmental analysts will greatly improve the use of existing data and the quality of MMS environmental assessments.

## **Commute Employment: Implications and Best Practice Approaches**

Commute Employment (sometimes called "fly-in" or "long-distance commute" employment) is characterized by a regular, repeated pattern of work in which workers travel to a worksite (typically remote) for a specific work period (often a week or more), where all accommodations are provided by the employer. Commute employment has implications for a variety of work, family, community, and regional issues.

The commute system gives rise to certain concerns that reflect on MMS's responsibility to protect the human, marine and coastal environments. These concerns may be related to health and safety, employment, availability or lack of training, employee's families, and the communities or regions in which employees live. The objective of this study is to examine the effects of commute employment and the options for managing them in the offshore oil and gas industry.



### The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



### The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Royalty Management Program** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.